

### III. Amendments to the Claims

Claim 1: (cancelled)

Claim 2 (amended): The blend of claim 1 5 formed into a shape having a density in the range of about 0.945 to about 0.955 grams per cubic centimeter, an MI of less than about 0.4, a flexural modulus of about at least 110,000 pounds per square inch, a tensile strength of about 3,000 pounds per square inch, and a notched constant tensile load (NCTL) of greater than 100 hours.

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Claim 3: (cancelled)

Claim 4 (amended): A corrugated polyethylene pipe formed from the blend of claim 4 5 having an ESCR exceeding 75 hours.

Claim 5 (new): A melt blend comprising a principal weight fraction component of a previously melted and solidified high molecular weight (HMW) high density polyethylene (HDPE) and a remainder weight fraction component of one or more than one of a previously melted and solidified low molecular weight (LMW) HDPE homopolymer and a previously melted and solidified LMW HDPE copolymer in a ratio in which the logarithm of the melt index (MI) of the blend equals the sum of the products of 1) the weight fraction of the HMW HDPE and the logarithm of the MI of

the HMW HDPE, 2) the weight fraction of the LMW HDPE homopolymer and the logarithm of the MI of the LMW HDPE homopolymer, and 3) the weight fraction of the LMW copolymer and the logarithm of the MI of the LMW HDPE copolymer, and in which the density of the blend equals the sum of 1) the product of the weight fraction and density of each HMW HDPE, 2) the product of the weight fraction and density of each LMW HDPE homopolymer, and 3) the product of the weight fraction and density of each LMW HDPE copolymer in the blend.

Claim 6 (new): A method of preparing a melt blend polyethylene composition having more than about 50% to about 95% by weight fraction of a previously melted and solidified high molecular weight (HMW) high density polyethylene (HDPE) comprising the steps of:

selecting a density and a melt index (MI) desired for the melt blend;

selecting a previously melted and solidified HMW HDPE as a first component of about 50% to about 95% by weight fraction of a mixture of components to be blended to produce the melt blend;

selecting a previously melted and solidified low molecular weight (LMW) HDPE copolymer as a second component in the mixture;

selecting as a third component in the mixture, in the instance that the density selected for the blended composition is greater than the density of the HMW HDPE first component, a previously melted and solidified LMW HDPE homopolymer;

determining a weight fraction ratio of LMW HDPE homopolymer to HMW HDPE in the melt blend, to attain the selected density of the melt blend, according to the formula:

the density of a mixture of the LMW HDPE homopolymer and the HMW HDPE component equals the sum of 1) the product of the weight fraction of the LMW HDPE homopolymer in the mixture and the density of LMW HDPE homopolymer and 2) the product the weight fraction of the HMW HDPE in the mixture and the density of HMW HDPE;

determining the MI of the mixture according to the formula;

the logarithm of the MI of the mixture equals the sum of 1) the product of the weight fraction of the LMW HDPE homopolymer in the mixture and the logarithm of MI of the LMW HDPE homopolymer and 2) the product the weight fraction of the HMW HDPE in the mixture and the logarithm of the MI of the HMW HDPE;

determining the ratio of the weight fraction of a previously melted and solidified LMW HDPE copolymer to be added to the mixture to attain the selected MI for the blended composition according to the formula:

the logarithm of the MI of the melt blend equals the sum of the products of 1) the weight fraction of the HMW HDPE and the logarithm of the MI of the HMW HDPE, 2) the weight fraction of

the LMW HDPE homopolymer and the logarithm of the MI of the LMW HDPE homopolymer, and 3) the weight fraction of the LMW HDPE copolymer;

and

melt blending the HMW HDPE and the LMW HDPE copolymer, and, if the selected density for the blended composition is greater than the density of the HMW HDPE, the LMW HDPE homopolymer, in the amounts determined.

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Claim 7 (New): The melt blend of claim 5 in which the principal component is selected from the group of one or more than one previously melted and solidified HMW HDPE component and the remainder component is selected from one or more than one composition in the group of previously melted and solidified LMW HDPE homopolymers and previously melted and solidified LMW HDPE copolymers.

Claim 8 (New): The melt blend of claim 5 blended from components selected from the group of virgin, reprocessed, recycled, off specification, wide specification, flake, and regrind material.

Claim 9 (New): The melt blend of claim 5 in which the HMW HDPE component is about 65% to about 80% by weight fraction.

Claim 10 (New): The method of claim 6 including the step of forming a shape from the composition.

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Claim 11 (New): The method of claim 6 in which the first component is selected from the group of one or more than one previously melted and solidified HMW HDPE compositions; the second component is selected from the group of one or more than one previously melted and solidified LMW HDPE homopolymer compositions; and the third component is selected from the group of one or more than one previously melted and solidified LMW HDPE copolymer compositions.

Claim 12 (New): The method of claim 6 in which the components are selected from the group of virgin, reprocessed, recycled, off specification, wide specification, flake, and regrind material.

Claim 13 (new): A melt blend of a previously melted and solidified HMW HDPE having a density in the range of about 0.945 to about 0.955 grams per cubic centimeter and MI values of about 0.01 to about 0.1 per 10 minutes and FRR of about 120 to about 280 and one or more than one of 1) a previously melted and solidified low molecular weight (LMW) HDPE homopolymer and 2) a previously melted and solidified LMW HDPE copolymer in a ratio in which the logarithm of the melt index (MI) of the blend equals the sum of 1) the products of each weight fraction of the HMW HDPE, the LMW HDPE homopolymer and the LMW HDPE copolymer in

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the blend and 2) the logarithm of the MI of the respective HMW HDPE, LMW HDPE homopolymer and the LMW HDPE copolymer in the blend.

Claim 14 (new): The blend of claim 13 in which the LMW HDPE homopolymer has a FRR of about 20 to about 60, a density in the range of about 0.955 to about 0.968 grams per cubic centimeter, and a MI of about 2 to about 80 grams per 10 minutes.

Claim 15 (new): The blend of claim 13 in which the LMW HDPE copolymer has a FRR of about 20 to about 60, a density in the range of about 0.947 to about 0.955 grams per cubic centimeters, and a MI of about 2.0 to about 80 grams per 10 minutes.

Claim 16 (new): A melt blend of claim 5 having an ESCR equal to or exceeding about 24 hours.

Claim 17 (new): A melt blend of claim 13 having an ESCR equal to or exceeding about 24 hours.

Claim 18 (New): The melt blend of claim 13 including HDPE selected from the group of virgin, reprocessed, recycled, off specification, wide specification, flake, and reground HDPE materials.

Claim 19 (New): The melt blend of claim 5 in which the HMW HDPE component is about 50% to about 95% by weight fraction.

Claim 20 (New): The melt blend of claim 13 in which the HMW HDPE component is about 50% to about 95% by weight fraction.

Claim 21 (New): The method of claim 6 in which the step of selecting a density and MI desired for the melt blend comprises selecting a density in the range of from about 0.945 to about 0.955 grams per cubic centimeter and the step of selecting a MI comprises selecting a MI of less than about 0.4.

Claim 22 (New): The method of claim 6 in which the step of selecting a HMW HDPE comprises selecting a HMW HDPE copolymer.